

Table 1. Selected quotes from manager focus groups, organized by themes relevant at the landscape level, describing both barriers and opportunities for prescribed fire management in the mid-Atlantic.

Theme	Barrier	Opportunity
Private vs Public coordination	<p>Lack of private landowner buy-in; low priority for some agencies</p> <p><i>“People don’t realize that if somebody is going to come burn your land, it costs money. And now as soon as they hear that, they go ‘Oh, okay. I am out.’ A very small percentage of those people want to do it out of the goodness of their heart because they want to do the right thing.”</i></p> <p><i>"Our first priorities are state lands, and then county and municipal grounds. And then obviously, private would be at the end of the priority list."</i></p>	<p>Co-benefit of hazard reduction</p> <p><i>“we support them [cranberry farmers] with whatever they need. Any burnt ground that they are accomplishing is going to help us as far as hazard reduction. You know, it is in our best interest to support them.”</i></p>
Infrastructure	<p>High risk of infrastructure damage</p> <p><i>“There are major freeways, interstates, turnpikes, railroad lines. There are transportation, communication, AT&T cables, cellular sites...gas lines. Lines going from America to Europe underneath the ocean. Cables that come up here in New Jersey. So all that type of infrastructure for billions of dollars, and conceivably if we have a major fire or a series of major fires, that can disrupt a lot of things, not just in New Jersey but probably throughout the whole country if that happens...The nuke {nuclear} plant.”</i></p> <p><i>“We have a lot bigger population compared to</i></p>	n/a

out West. So, we have a lot of public people, roads or homes or developments or businesses that we have to take into consideration when we burn”

Interface

Tight intermingling of ownerships

"because New Jersey has 800 something municipalities in 21 counties, there are different layers of government that have to give “okays” especially on township, municipal, or county ground.”

“What is going to make it hard for landscape-level burning outside of agencies who have lots of continuous lands? Fragmentation. That is killing us in Pennsylvania.”

"It is New Jersey, and at some point in time, smoke is going somewhere. It could go and end up on the shore communities and there is no forest at all. Fortunately enough, in the winter time, there is usually not a lot of people there, but smoke rise and then it falls. It is coming down somewhere."

Appreciation of Landscape-Approach

“even from an ecological point of view, we are trying to educate our resource folks that governing larger tracts is better, easier, and more cost effective, time effective, in the long run.”

“we wish [the public] knew the challenges that the forest professionals face, and we need more tools to be able to affect larger areas, or recognitions that it is critically important to have more tools in the face of big radiating forests.”

Objectives	Difficult to coordinate across agencies to meet multiple objectives	Co-benefits & learning as a process
	<p><i>" [other natural resource managers] are charged with pine snakes or raptors or bats or plans, and they are managing it by the square feet, not recognizing the landscape level approach: You are going to get that mosaic of conditions through fire on a wider scale. And they are inflexible with that."</i></p> <p><i>"you have to get professional buy-in as much as public buy-in; professional education as much as public education. And maybe where you are coming against two ideologies, one is not really wrong or right, it is just a difference of opinion."</i></p>	<p><i>"A big percentage of [state lands] is Fish and Game property, so we are reducing fuel hazard because of the visitors that we have in there, but we also work with those land managers in what species are being harvested in that property and how it makes that habitat better for hunters to come in or whoever it is that uses that property."</i></p> <p><i>"We don't have all the answers yet. We are still learning, and I feel like we just learned to put fire on the ground safely and develop our crew experience. Now we have to figure out the rest of the problems, how to hit our management goals and how to hit them effectively."</i></p>
Capacity and Flexibility	<p>Trained personnel</p> <p><i>"not having appropriately trained people can be a risk of how they are putting fire on the ground and what that fire is going to do, as well as what the cars driving by are going to do."</i></p> <p><i>"With all of the competing species and all of the [burn] windows that we have to abide by, [...], it narrows down your operational window to a small window if you can even do it in some cases."</i></p> <p><i>"we are natural resources professionals in general. We are not marketing professionals, so we are often asked and tasked with developing some kind of communication mechanism to inform people or change people's minds, and we are not well-equipped in general to do that."</i></p>	<p>New policy means greater flexibility</p> <p><i>"Now, they have expanded the weather prescription parameters and this year we did more than we have done in the last five years combined with the new parameters."</i></p>

Table Appendix C2. Selected quotes from manager focus groups, organized by themes relevant at the community level, describing both barriers and opportunities for prescribed fire management in the mid-Atlantic.

Theme	Barrier	Opportunity
Spatial variation in community exposure	<p><i>"It is a 50-50 split. There is just as many people that like it and think that it is the greatest thing in the world. And there is just as many people who hate it."</i></p> <p><i>"down in the southern part of the state here come March and February on a good day, you are going to see four or five columns of smoke up in the air. And everybody backed up on the parkway or on the expressway, they all see that, and they know it's part of their life. The farther north you go, there has been less of it because it is a different ecosystem, and there are fewer burns happening, and people aren't seeing those columns of smoke. So it is not part of their everyday life."</i></p>	
Temporal variation in communities (turnover/ new residents)	<p>Newer residents have little experience or knowledge about fire</p> <p><i>"We are running into more and more issues now as different groups moving into New Jersey, retirement people and/or other people that are not familiar with the burning."</i></p> <p><i>"Well, people that lived here for a long time and know the program, you know, they understand it. But it is because of sprawl and people moving from outside of the area, we just have to spend more time educating them, easing them into it."</i></p>	

	<i>“they paid a premium to live in the pristine {uses air quotes} Pine Barrens. They paid a premium to live there. They came to our first Firewise meeting and walked out mad.”</i>	
Education	<i>“To me, fire risk is a lack of knowledge.”</i>	<i>“I think that this whole thing comes down to, in my opinion, education. I think the more you educate the people, the more they are willing to accept anywhere from prescribed burns to mechanical clearing and so on. You have to get out to the people. Education to me starts from the top, and I’m talking about government officials, local officials, and down the line. When you educate the people, then your community becomes safer because you’re able to do things to keep your community safe.”</i>
Experience	<p><i>"We do a lot of outreach for, I will call it fire prevention, but a lot of those people when you educate them about wildfires, and they don't see any smoke columns, there is no purpose."</i></p> <p><i>“maybe the majority of the public doesn’t really have an opinion positive or negative about it because they don’t really see it that much. They are not exposed to it so maybe it is something where we could shape their perception either way.”</i></p> <p><i>"For three months after I burned it, all I heard was 'it looks terrible. It looks terrible. It looks terrible.' But now, here we are 16 months after the fact, and 'we never thought that block of woods could look like that'."</i></p> <p><i>“then 6 months down the road, everybody commenting about how nice it looked and how quickly it returned and how surprised they were.</i></p>	<p><i>“I think that we would all agree that when folks observe a fire, I think their perceptions really change. They realize how, they learn a lot. And we are talking about education, and one of the best ways to educate them is for them to spend ten minutes just watching it and how it goes down.”</i></p> <p><i>“When the public actually notices something, rather the government or an agency saying this is a benefit, [...] when the public can actually see that for themselves, they can quantify that, that is really nice because that then really justifies the work that we do for them.”</i></p> <p><i>"I will try and introduce it more often to keep the iron hot, if you will, to keep the education and the message going. Expose them to a little bit of smoke here and there, and that helps fuel reception to the education. They are not forgetting about it or it is reminding them that there is a reason of why we are doing this.”</i></p>

Because they didn't have a real understanding of what the return rate of it was. They were surprised to see how green it is the following spring."

"I believe it was back in early 80s that there was a fire, and several were lost due to smoke inhalation. So I know how dangerous just the smoke is, let alone the blaze from the fire, how deadly it is. So we are on board, and we are eager to learn what's going on and everything we can about this."

"It's just amazing to watch. If you have a chance to go see one, definitely go see. They are two feet away from the building, and like it is going to stop right there because of what they did. They raked, you know. It's so organized so I have total faith in the guys. I think they do a great job."

"We have actually had people complain about us burning, [...] and the following year called and asked can we burn their property. A complete 180. One minute we are the worst agency the state has, and they can't stand us. This looks awful. I can't believe you are doing this. And literally, the next year, they come into our office with a burn application."

Mental image of the West

"The main reason they are concerned of it hurting the forest is the mental image of a fire, a crown fire of Douglas Fir or Ponderosa Pine, something out West that has got 200-foot flame lengths whereas when we talk about fire we walk about flame lengths of 1 to 3 feet on the forest understory. So their vision of fire is not what we are hoping to put on the ground."

"I had a home owner this year that actually brought his whole family out. Their property went right up against state property. And they do their job of foresting their property and thinning out. He brought his kids out, and applauded us and praised us, and educated them on why we were burning behind their property. Saying 'I am so glad you are doing this. We do our part to try to keep our property safe. I am glad the state is doing your job.'"

"...the public is more maybe scared of because of what they have seen on TV, and they don't realize what is actually happening." Said another: "We had people actually concerned that it was going to move 25 miles, jump a river, and then come 15 miles up towards them because they see what it is like out West...Yea, it is TV."

"I think what they think of when they think of fire is in California. They think of those major fires. What we try to distill in our conservation with them is that it doesn't take a major fire, an acre could destroy your house."

Attitudes	<p><i>"we do a really good job at our job that they don't even realize that we have this fire problem because we suppress it before it gets too big so then the prescribed burning turns into the bigger event because even though we have it under control, they perceive that as a wildfire instead of a prescribed burn fire."</i></p> <p><i>"In this region, we have had a lot of success with using fire for management. But I know in other areas of the country, one screw up and their burning program is shut down for ten years. So that is a negative impact. We hadn't had that issue because we are very careful on the planning and execution of it. That is a huge negative if something does go wrong."</i></p>	Changing Attitudes <p><i>"More people are more in tuned to prescribed burning. When I first started 20 something years ago, in our area, we didn't burn because we were just too suburban, and we just create too many issues." But, he continued, that "we were able to convince them to start letting us do that. It has expanded. It has gone well. And now it has actually come full circle. [...] So now the land managers are actually trying to get to do some type of warm season burn to kill the oaks."</i></p>
Messaging and Social Media	<p><i>"On burn day, everybody is burning. So, we might get 30 different areas that we are burning, and then that gets sent to our Trenton office and that all has to</i></p>	<p><i>"we try to do a campaign before the season starts to re-educate everyone that, hey, controlled burning season is coming up...You are going to see smoke. We try</i></p>

get distributed to everybody, including our own state personnel because all of the land managers want to know where the burning is taking place and it has to go out to all the media outlets also. By the time all that stuff gets where it is going, we are probably done burning. "

"everybody is like 'I want to know. I want to know. I want to know.' But we don't even know until basically the time of if it is going to work out to do a prescribed fire in that area."

the best we can to mitigate smoke, to notify the public. It is to our best interest, the poor dispatchers that work for the county dispatches are getting 911 calls through the roof."

Social Networks

"Our biggest reason, I would say that we jumped on [Firewise] is we have such a disconnect in a very small community. Its 192 homes. Nobody knows anything about anybody on the street, who lives next door. They know nothing. So in an emergency, it would be complete and utter chaos."

"Listen, we did our work. We don't want our homes to burn down because you haven't done yours.' Then they try to educate them, pressure them really to realize that they have the back door against it."

"[Firewise communities] are allies for us because it is not just one section fire warden trying to educate his area. Now you have three or four communities, and they are promoting the same message. So, yeah, it is a huge positive."

Table Appendix C3. Selected quotes from manager focus groups, organized by themes relevant at the individual level, describing both barriers and opportunities for prescribed fire management in the mid-Atlantic.

Theme	Barrier	Opportunity
Fear and Care	<p>Fear of litigation (fire managers) and safety (fire managers and community)</p> <p><i>“See, I got the angel and the devil. I listen to the phone calls from people that are going to sue me vs. the people that want to burn. I am kind of torn”</i></p> <p><i>“I spoke at a social club meeting and somebody came up to me and said, if you were on my property for that cleanup, what if you get hurt, are you going to <u>sue</u> me?”</i></p> <p><i>"Anybody that hasn't had a bad day hasn't burned or they are lying."</i></p> <p><i>"I see as a lot of people don't understand that when using prescribed fire, you are still playing with fire in the woods."</i></p> <p><i>"You better have more than one plan. In this state, you better have like four plans in your head."</i></p> <p><i>"there have been days [...] when, geez, maybe the fast food industry would be a better line of work than doing this when you realize the escape potential or getting someone hurt."</i></p>	<p>Reciprocal sense of care between firefighters and community</p> <p><i>“the other thing that we wanted them to know is that it isn't just a bunch of guys who get together at a bar the night before and decide we are going to light the woods on fire. There is a lot of planning and effort that goes into the burning. And we are very concerned about safety and the issues involved around how much training it takes to be qualified to do these burns.”</i></p> <p><i>“[...]it just gives you a really good feeling. We know that we are not going to stop at the worst fire, but if we can save a life or save a property, if we can help the fire company to go somewhere else and do something else, it's successful. It just makes us feel good.”</i></p> <p><i>“if we save one home or saved one firefighter from having to go to that home, it's worth it, for that firefighter's life.”</i></p> <p><i>"The families that have been in the Pinelands, and I would say the more rural areas of the state, for a long period of time, know that fire is a problem, and they know what we are doing is, we are trying to address the problem."</i></p>

“we have a real reason because we have one way in and one way out of our community. We are surrounded by, like in a cup, with the woods around us so. And that’s why we want to learn more about what’s going on.”

“Both of our communities are senior communities and you knock on the door, sometimes it takes five ten minutes for somebody to come to the door by the time they find their walker, get out of their wheelchair, whatever, and its real important if you don’t want to trailer full of crispy critters, to make sure you can do as much as you possibly can.”

“They don’t realize that you have to take your driver’s license and your medicine and your pet and clothes for a couple of days and, you know, any of those things, like oxygen, because a hurricane goes away in a couple of hours, a thunderstorm in a couple. A forest fire can go for weeks.”

Trust

Mistrust due to lack of experience with fire

"So the public image of us when we do land management projects besides prescribed burning isn’t always positive, even though it is for their benefit of life safety[...] They think that we are just destroying habitat. And it looks ugly. And how dare we go in there and do things."

“I had people get in my face the first couple meetings we had with the community, where rumors were spreading like I am going to clearcut the area, everything that you can

Trust in “network broker” fostered community learning

“The trust factor. There are three kinds of people in the world. People who make things happen. People who watch things happen, and people who wonder what happened. [The manager] makes things happen.”

“he makes opportunities like this [focus group] happen so that we are not out there by ourselves. If you look, there is a whole room of people. We all started as an individual community. None of us

imagine. And that is I think the most difficult for me and frustrating: trying to educate the people.”

“Maybe expecting too much of the public, but it would be nice if the public saw fire as just one of many tools professionals use to manage complicated ecosystems and recognize it as having a place, as a tool, to be used in that.”

knew each other. But we have all started, as meetings go, to learn, and that’s where you build trust when you present the opportunities for people to get together to converse the problems, to figure it out, to have people with new and different ideas to come in, and deal with that. That’s where your trust starts to come.”

“I think they [The New Jersey Fire Service managers] have saved lives. They have stopped these fires. And that’s where the trust comes from.”

“When we decided to become a firewise community, I got [the manager’s] number, and I called him. He returned my call while he was on vacation, and I was sold right then that he was committed. I mean, calling when he was on vacation! “

“I asked if he could come and see our community, he said, how about these days? And I said, really? And it was like a week later. Like nobody does that anymore. [...] Every time I have asked [the manager] for anything, he is there. And that is why we have trust.”

Complacency

“Well you asked about frustrations. Number one is complacency. Without fire, they lose interest.” Another Firewise community member reflected: “I think when it comes to the public, they are very busy and many people are working. They have children. You know, some people have church activities. And if you say, where is wildfire on your list of things that you are afraid of,

they would put it down as a zero or a one.”

“They are saying, you haven’t had any fires in so many years, which is kind of a bad thing because vegetation is getting worse because it is not burning so the chances of fires are even greater. We try to get that across, but again, people just don’t want to come out, and they don’t want to leave their house.”

"Most of the people that support us doing it are in those areas where it is the most benefit for them. People that live in the middle of a subdivision could care less. So they don’t give us really any positives. It is more negatives coming from those folks."

"The public doesn’t want to be held up in traffic or inconvenienced because we are burning,"
